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“Community TB care in Africa”

**A collaborative project
coordinated by WHO**

**Report on a “lessons learned” meeting
in Harare, Zimbabwe, 27-29 September 2000**

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Glossary of abbreviations

AFRO	Regional Office of Africa (of the World Health Organization)
AIDS	Acquired Immunodeficiency Syndrome
CDC	Centers for Disease Control and Prevention (Atlanta, USA)
CHW	Community Health Worker
DOT	Directly Observed Treatment
DOTS	The brand name of the internationally recommended TB control strategy
DTO	District Tuberculosis Officer
EPTB	Extrapulmonary tuberculosis
HIV	Human Immunodeficiency Virus
IUATLD	International Union Against Tuberculosis and Lung Disease
KNCV	Royal Netherlands Tuberculosis Association
NGO	Non-governmental Organisation
NTP	National Tuberculosis Programme
PHC	Primary Health Care
PI	Principal Investigator
PLWHA	People Living With HIV/AIDS
PTB	Pulmonary tuberculosis
TB	Tuberculosis
TB/HIV	HIV-associated tuberculosis
UNAIDS	Joint United Nations Programme on HIV/AIDS
USAID	United States Agency for International Development
WHO	World Health Organization

SUMMARY

The HIV-fuelled tuberculosis (TB) epidemic is outstripping the ability of health services to cope in many countries in sub-Saharan Africa. Since National TB Programmes (NTPs) are often not achieving adequate case-detection and treatment outcomes, it is necessary to explore ways of complementing government health service provision of TB care. A WHO-coordinated mission in 1995 assessed TB care in community-based organizations in several countries and recommended operational research to evaluate the potential of community organizations to contribute to the delivery of effective TB care, as part of NTP activities.

WHO has since 1996 coordinated the evaluation by NTPs of community contribution to effective TB control in sub-Saharan Africa through a multi-national, collaborative project, "Community TB care in Africa". The partners collaborating with NTPs and WHO are the United States Centers for Disease Control (CDC), the United States Agency for International Development (USAID), the International Union Against Tuberculosis and Lung Disease (IUATLD), the Royal Netherlands Tuberculosis Association (KNCV), and the United Nations Joint Programme on HIV/AIDS (UNAIDS).

The aim of the project was to demonstrate that decentralizing the provision of TB care beyond health facilities and into the community can contribute to effective NTP performance. The project has evaluated the community contribution to effective TB control, as part of NTP activities, in 8 district-based projects in 6 high HIV prevalence countries (Botswana, Kenya, Malawi, South Africa, Uganda and Zambia). The main focus of the project is the community contribution to effective TB care through supporting TB patients throughout treatment until cure (including directly observing the initial phase of treatment). The project outcomes are effectiveness, acceptability, affordability, and cost-effectiveness of TB care.

The project began in 1996 with mobilization of funding, identification of project sites and investigators, and development, review and approval of project proposals. After preparatory work and training, district-based projects began implementation of community TB care interventions in early 1998. Two projects (Estie, Ethiopia, and Kilombero, Tanzania) received technical support from WHO while not falling under the umbrella of the project "Community TB Care in Africa". The Project Investigators (PIs) of these two projects as well as the PIs of the other 8 projects presented their results at the "lessons learned" workshop held in Harare in September 2000.

In all the projects, the intervention was the introduction of trained and supervised community members in supporting TB patients and directly observing their treatment (community TB treatment supporters). TB patients then have the option of community Directly Observed Treatment (DOT), in addition to health facility DOT (as an in-patient or out-patient). The initial emphasis was on improving treatment outcomes rather than intensifying case-finding. It is important to expand case-finding only in settings achieving a high cure rate, otherwise expanded case-finding with a low cure rate results in increased numbers of inadequately treated TB patients (contributing to an increased pool of infectious cases) and increased drug-resistance. In settings achieving high rates of treatment success, it will be valuable to explore how community contribution to TB care can also extend to helping identify TB suspects in order to intensify case-finding.

Implementing the option of community DOT involves addressing the following issues: i) how to identify and mobilise the appropriate community organization; ii) how to develop links between general health services, NTP and the community organization; iii) how to train and supervise community members; iv) how to develop and introduce recording and reporting systems in the community, v) how to distribute anti-TB drugs and prevent potential abuse (particularly of rifampicin); vi) how NTPs can face the challenge of extending their current management responsibilities when harnessing community contribution to tuberculosis care.

An interim assessment of progress made at the end of 1998 concluded that successful collaboration between the general health services, NTP and CHWs depends on the following: i) good communication links and referral scheme; ii) good education of the tuberculosis patient and the patient's family; iii) training of the CHWs and the health services' staff; iv) system of regular supervision of CHWs by NTP and general health services' staff. The main challenges in implementing the intervention included the identification of the leadership responsible for managing the change process, the development of the management capacity, and ensuring sustainability.

By the end of 2000, projects had obtained provisional results, which PIs presented at the "lessons learned" workshop and which appear in this report. The provisional results from district-based projects in different settings indicate that providing the option of community TB treatment supporters as supervisors of DOT can contribute to national TB programme activities in ways which are effective, cost-effective, affordable and acceptable, under the conditions set out in the main meeting recommendations.

Main meeting recommendations

- 1) NTPs should consider harnessing community contribution to TB care where there is the need to increase access to effective TB care.
- 2) Pre-requisites for harnessing community contribution to TB care include a strong NTP with all the necessary components in place, particularly an effective recording and reporting system. Ideally the community based care system is already established and serving a needy population.
- 3) NTPs should ensure that community members are effective TB treatment supporters:
 - a) identification of suitable community TB treatment supporters requires consultation with the community and consideration of the benefits for sustainability of using a well-established community group;
 - b) training of community TB treatment supporters requires clear definition of roles and core tasks to ensure an effective working relationship with health workers;
 - c) health service support to community TB treatment supporters, including supervision, requires a system of regular contact between the community TB treatment supporters and general health service and NTP staff, which may involve regular review meetings and a link person between the peripheral health unit and the community TB treatment supporters to help foster effective communication;
 - d) preventing "drop-out" community TB treatment supporters requires ensuring that they continue to receive whatever is the perceived benefit in a specific setting.

- 4) NTPs should ensure an effective recording and reporting system extended into the community, with registers beyond the district in the peripheral health units (indicating the type of DOT for each TB patient). The community TB treatment supporter should be responsible for each patient's treatment card. Each patient should keep an identity card (with information including type of treatment, type of DOT supervision, sputum results).
- 5) NTPs should ensure an effective, secure and safe system of supply to TB patients and their treatment supporters of anti-TB drugs, provided and packaged in ways to promote adherence (e.g. fixed-dose combinations, calendar blister packs).
- 6) NTPs should monitor community contribution to TB care using the standard NTP performance indicators (case finding and treatment outcomes), information on the numbers of patients choosing different DOT options, and, as they are developed, quality of care indicators.
- 7) Ministries of Health need to ensure adequate financing, on account of the new costs involved in harnessing community contribution to TB care, while recognising that this is a cost-effective approach.
- 8) Obtaining the commitment of Ministries of Health, NTPs, donors and NGOs to ensure the sustainability of the community approach requires advocacy and policy development based on results.
- 9) NTPs should develop costed plans for expansion of the community approach.
- 10) Ministries of Health should consider opportunities for collaboration between NTPs and HIV/AIDS programmes, including community health worker provision of integrated HIV/AIDS and TB care (although caution is necessary to ensure that the stigma commonly attached to HIV/AIDS does not deter TB patients from obtaining care from HIV/AIDS groups).

Ministries of Health in several countries, including Kenya, Malawi and Uganda, are now developing plans to scale up the community approach. The experience from Uganda is that successful community contribution to TB care in the pilot project in Kiboga District helped to inform the process of health sector development. WHO will coordinate the production of policy guidelines in 2001 based on the project results finalised after the peer review process of submitting results for publication in an international journal. Dissemination and implementation of policy guidelines for community contribution to TB care are likely to result in the more widely available provision of effective TB care and the more efficient use of resources through social mobilization.

REPORT

1. Background

The priority communicable diseases of the poor include malaria, HIV and TB. Achieving the international development targets for health involves ensuring access to interventions to decrease the burden of these diseases among the poor. One of the aims of the World Health Organization (WHO) and the International Union against Tuberculosis and Lung Disease (IUATLD) in recommending integration of standard national TB control programmes (NTPs) with general health services^{1,2} is to promote access to effective TB care. However, government health services reach only a proportion of the population, on

account of the following main limitations: a) an inadequate health service infrastructure in many countries; b) inadequate access to care because of insufficient decentralisation; c) human and financial resource requirements that exceed locally available resources.

Community contribution to effective TB care, as part of NTP activities, has the potential to help to overcome these limitations, resulting in more widespread implementation of the internationally recommended TB control strategy and more efficient use of resources. Harnessing the community contribution could dramatically expand the provision of effective ambulatory TB care.

Recognition of the importance of community involvement in NTP activities is not new. The Ninth Report of the WHO Expert Committee on TB stated in 1974 that “it is important that the community should be involved in the (tuberculosis) programme, including its leaders, such as village elders, tribal chieftains, or other influential persons, and the welfare organizations, including the voluntary agencies and laity”.³ However until recently the focus of activities aimed at strengthening NTPs has generally been much more on the general health services than on harnessing the community contribution.

The dramatic increase in the TB burden over the past decade, related to the HIV epidemic, in many countries in sub-Saharan Africa⁴ has greatly increased the pressure on existing government and non-governmental organisation (NGO) health services, prompting fresh interest in evaluating the potential contribution of communities to TB care in this region, and elsewhere.⁵ The contribution of communities to TB care represents a particular aspect of the more general issue of community participation in Primary Health Care (PHC). Some commentators have suggested that successful public health in developing countries depends on a re-crafted framework which “locates organised and active communities at the centre as initiators and managers of their own health”.⁶ Community participation in health extends the reach of health care to the maximum number of people, particularly the poorest and most vulnerable.⁷

It is useful to consider what a “community” is and what is meant by “community contribution to TB care”. A useful definition of a community is “a group of people who have something in common and will act together in their common interest. Many people belong to a number of different communities - examples include the place where they live, the people they work with, or their religious group”.⁸ The proposed model for community contribution to TB care⁹ makes it clear that this contribution is part of NTP activities. Thus, community activities do not substitute for NTP activities. The overall responsibility for TB control remains with the NTP. Communities may contribute to effective TB care through the following activities: supporting TB patients throughout treatment until cure (including directly observing the initial phase of treatment); patient, family and community education; case-finding; lobbying for government commitment to TB control; increasing accountability of local health services to the community.¹⁰

The HIV-fuelled TB epidemic in sub-Saharan Africa is often outstripping health services’ ability to cope. Many countries are not achieving adequate case-detection and treatment outcomes.⁴ There is thus a pressing need to evaluate the potential of community contribution to TB care. In 1995 WHO co-ordinated an assessment of TB care in several community-based, mostly HIV/AIDS care organizations in Uganda, Malawi, Zambia and South Africa.⁹ The review team found a need to strengthen links between the NTP, PHC services, and community organisations to ensure full implementation of the recommended TB control strategy. The team recognized that community organizations have the potential to contribute

to the delivery of effective TB care, as part of NTP activities. The mission recommended operational research to evaluate this potential.

WHO then coordinated the evaluation by NTPs of community contribution to effective TB control in sub-Saharan Africa through a multi-national, collaborative project, “Community TB care in Africa”. The partners collaborating with the NTPs and WHO are the United States Centers for Disease Control (CDC), the United States Agency for International Development (USAID), the International Union Against Tuberculosis and Lung Disease (IUATLD), the Royal Netherlands Tuberculosis Association (KNCV), and the United Nations Joint Programme on HIV/AIDS (UNAIDS).

The aim of the project is to assess whether decentralizing the provision of TB care beyond health facilities and into the community can help to overcome some of the limitations of reliance on health facilities. The project has evaluated the community contribution to effective TB control, as part of NTP activities, in high HIV prevalence countries. The main focus of the project is the community contribution to effective TB care by supporting TB patients throughout treatment until cure (including directly observing the initial phase of treatment). TB patients thus have the option of community DOT, in addition to health facility DOT (as an in-patient or out-patient). It is important to expand case-finding only in settings achieving a high cure rate, otherwise expanded case-finding with a low cure rate results in increased numbers of inadequately treated TB patients (contributing to an increased pool of infectious cases) and increased drug-resistance.¹¹ In settings achieving high rates of treatment success, it will be valuable to explore how community contribution to TB care can also extend to helping identify TB suspects in order to intensify case-finding and decrease diagnostic delays.

Project outcomes (shown in Table 1) are effectiveness, acceptability, affordability, and cost-effectiveness of TB care.

Table 1. Project outcome measures for each criterion of success.

Criterion of success	Outcome measures
Effectiveness	TB case-finding and treatment outcome results
Affordability	Costs and cost-effectiveness
Acceptability	Social science qualitative assessment

The project began in late 1996 with mobilization of funding, identification of project sites and investigators, and development, review and approval of project proposals.¹² District-based projects began implementation of community TB care interventions in early 1998. Table 2 shows the 8 district-based projects in the 6 participating countries (Botswana, Kenya, Malawi, South Africa, Uganda and Zambia). Two projects (Estie, Ethiopia, and Kilombero, Tanzania) received technical support from WHO while not falling under the umbrella of the project “Community TB Care in Africa”. The Project Investigators (PIs) of these two projects as well as the PIs of the 8 projects shown in the Table 2 all presented their results at the “lessons learned” workshop held in Harare in September 2000.

Table 2 Important features of district-based operational research projects in sub-Saharan Africa to evaluate community contribution to TB care

Country	project site	Setting	Type of study	Community Organisation
Botswana	Francistown	Urban	Historical comparison	HIV/AIDS home care programme
Kenya	Machakos	Rural	Historical comparison	PHC volunteers and community-based distributors of contraceptives
Malawi	Lilongwe	Urban	Historical comparison	Guardians and community workers
Uganda	Kiboga	Rural	Historical comparison	Parish development committee
Zambia	Ndola	Urban	Prospective controlled study	Church NGO HIV/AIDS home care programme
South Africa	Guguletu, Cape Town	Urban	Historical comparison	Tuberculosis NGO
South Africa	Hlabisa, KwaZulu/Natal	Rural	Prospective controlled study	Traditional healers

In all the studies, the intervention is the introduction of trained and supervised members of a community organization in supporting tuberculosis patients and directly observing their treatment. Implementing this intervention involves addressing the following issues: i) how to identify and mobilise the appropriate community organization; ii) how to develop links between general health services, NTP and the community organization; iii) how to train and supervise community members; iv) how to develop and introduce recording and reporting systems in the community, v) how to distribute anti-tuberculosis drugs and prevent potential abuse (particularly of rifampicin); vi) how NTPs can face the challenge of extending their current management responsibilities when harnessing community contribution to tuberculosis care.

An interim assessment of progress made at the end of 1998 concluded that successful collaboration between the general health services, NTP and CHWs depends on the following: i) good communication links and referral scheme; ii) good education of the TB patient and the patient's family; iii) training of the CHWs and the health services' staff; iv) system of regular supervision of CHWs by NTP and general health services' staff.¹³ The main challenges in implementing the intervention included the identification of the leadership responsible for managing the change process, the development of the management capacity, and ensuring sustainability.

By the end of 2000, projects had obtained the provisional results presented at the "lessons learned" workshop and appearing in this report. PIs will submit research papers with final results for submission to an international peer-reviewed journal. Final results which have passed the scrutiny of the peer review process will provide the rational basis for developing policy guidelines. If the overall evaluation of community contribution is favourable, dissemination and implementation of policy guidelines for community contribution are likely to result in the more widely available provision of effective tuberculosis care and the more efficient use of resources through social mobilization.

2. Meeting objectives

1. To compare results of the projects according to case finding, treatment outcomes, economic analyses, and acceptability studies
2. To discuss main themes and identify lessons learned
3. To discuss expansion of approach with adaptation to other settings
4. To develop policies and guidelines
5. To identify the main tasks of community TB treatment supporters and the training steps necessary in introducing the approach of community contribution to TB care.

3. Results of community TB care intervention projects

Since the project PIs will be submitting detailed research papers with final results to an international peer-reviewed journal, the project reports are presented here as summaries. In particular, full details of the methods used for economic evaluations are available in two documents available from Katherine Floyd, Stop TB Department, WHO Geneva: 1) Economics consultancy for the WHO “Community TB Care in Africa” project – report submitted to WHO in January 1998; 2) Cost and cost-effectiveness of TB diagnosis and treatment services: a package of background documents, protocols and data collection sheets.

Francistown, Botswana

Background

Botswana has maintained 100% clinic-based DOTS coverage since 1986, in spite of a tripling of TB cases during the 1990s due to the severe HIV/AIDS epidemic. The TB treatment regimen in Botswana is 2HRZE/6HR for all newly registered patients. However, the HIV/AIDS epidemic has created a new population of TB patients with advanced AIDS who are unable to access nearby clinics from home but yet do not require hospitalization. The National AIDS Control Programme has initiated a home-based care (HBC) programme for such people living with HIV/AIDS (PLWHA) who are chronically ill. The programme provides nursing supervisors for HBC in the district as well as palliative drugs, gloves, and training to carers in affected households and communities.

The project investigators established a referral scheme for PLWHA diagnosed with TB who are unable to access clinic-based DOT. The patient identifies their own carer, usually a family member, who provides DOT at home. The carer is educated by a hospital or clinic nurse on how to deliver DOT at home and is provided with a handbook “Home-based care for the TB patient”. The carer obtains the TB drugs from the clinic and is supported by the district HBC nurses and Family Welfare Educator (FWE) who is the link between the community and the nearest clinic. The clinic nurse is responsible for monitoring TB patients on HBC and maintaining the clinic TB register.

Francistown is a city with a population of approximately 100,000 and HIV prevalence among antenatal women in 1999 was 39%. The 1999 TB case rate was 5xx/100,000 in 1999 and 85% of hospitalized TB patients in 1998 were HIV-positive. The city has 15 clinics, 1 hospital, 2 sputum microscopy laboratories, 4 HBC nursing supervisors, and 35 FWEs.

Aim

To determine the costs and cost-effectiveness of TB care at home versus TB care in hospital for chronically ill TB patients.

Methods

TB patients on HBC were identified retrospectively from the district HBC register for 1997. The TB register was reviewed and carers were interviewed. TB patients who were hospitalized >15 days were defined as being chronically ill and were identified prospectively from the medical and TB wards. Their medical record was reviewed and the carer was interviewed. Health system costs were determined from record reviews and staff interviews. Carer costs were determined from interviews and the statutory minimum wage was used to determine time costs for carers. Because of extremely high mortality rates in patients with advanced AIDS, compliance was the outcome measure. Compliance was defined as number of doses taken/number of eligible doses .

Results

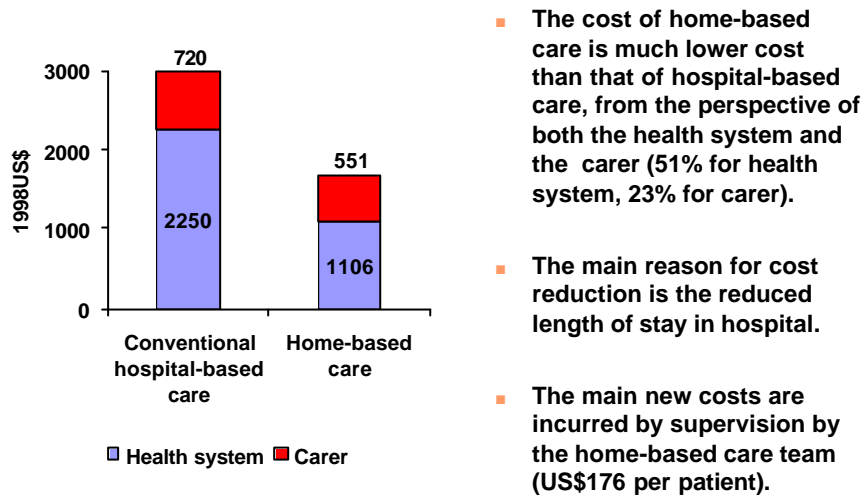
	TB Patients on HBC (n=50)	Hospitalized TB Patients (n=50)
HIV prevalence	100%	
Mortality	40%	
Rx completion	60%	
Compliance	96%	100%
Days in hospital before ambulatory to DOT	21	93
Cost/patient treated (\$)		
Health system	1106	2250
Carer	551	720
Cost/patient compliant	1726	2970

Because the carer is chosen by the patient, the acceptability of the intervention was very high among patients and carers. It was also high among health care workers because it helped to reduce the burden on the clinic to transport health workers or the patient for care provision.

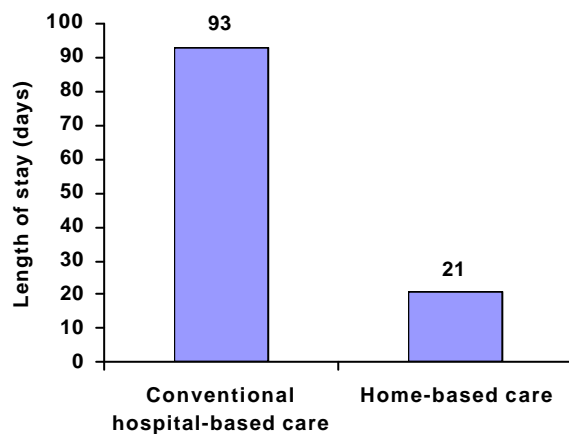
Conclusion

Though the mortality rate in TB patients on HBC is inherently very high because of advanced AIDS, DOT can be provided efficiently and in a cost-effective manner compared to hospitalization of such patients. Compared to hospitalization, HBC reduced health system costs by 51% and carer costs by 23%. The main reason for reduction was the reduced length of stay in hospital. HBC improved cost-effectiveness by 42% compared with hospitalization. Wherever feasible, the National HBC Programme should adopt this strategy to deliver TB care to chronically ill TB patients nationally.

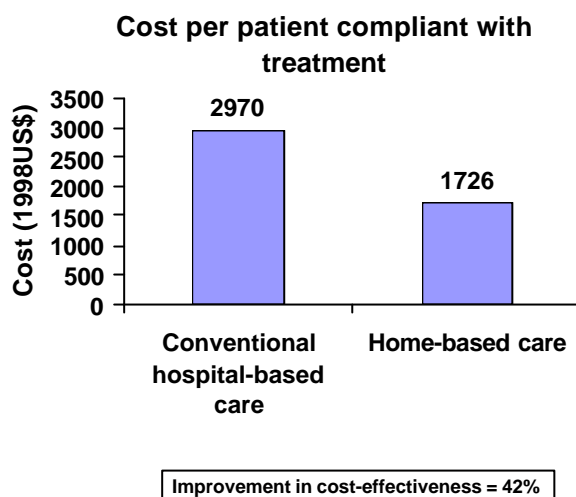
Cost per patient treated



Length of stay in hospital



Cost-effectiveness



Machakos, Kenya

Background

The HIV epidemic has fuelled a large increase in TB cases in Kenya resulting in congested hospital wards where most patients, especially smear-positive, have been routinely admitted for 2 months during the intensive phase. In addition, few peripheral health facilities have provided care during the continuation phase. The goal of this study was to pilot-test an ambulatory approach to TB care in Machakos District to reduce hospital congestion and to maximized successful TB treatment.

Machakos is a predominantly rural district with a population of 909,348 (1999). Health facilities included 3 public hospitals, 8 private and mission hospitals, 8 public health units with sputum smear microscopy, and 54 peripheral units as diagnostic centers for TB.

Aim

To compare the costs and cost-effectiveness of a new strategy for TB care which provides patients with options for ambulatory care with the previous strategy of hospitalization.

Methods

The new strategy for TB care in Machakos which provides patients with options for ambulatory care ambulatory TB care included: hospital admission for only very sick patients or for social reasons; replacement of streptomycin with ethambutol during the intensive phase (2HRZE/6HE); use of peripheral health units for provision of DOT; use of community or family members as DOT providers.

Patients newly registered with TB in 1996 were used as a historical control group. The intervention group included newly registered TB patients identified prospectively from Oct 1997 through Sept 1998. Implementation of the new strategy required significant community mobilization. The

community selected volunteers to serve as DOT providers. Qualitative methods were used to assess acceptability of the new intervention.

An economic evaluation was undertaken to compare the affordability and cost-effectiveness of an approach to TB care which includes the option of community supervision of DOT with an approach relying only on health facility DOT. The impact of the community approach on average length of stay in hospital was also assessed.

Results

Of the 1266 TB patients in the new strategy intervention group, only 17% chose the community DOT supervisor while 30% chose the public health unit, 52% the hospital outpatient department, and 1% the hospital ward for the site of treatment supervision.

Patients identified

	Intervention group (n=1266)	Control group (n=1141)
New smear pos	56%	53%
New smear neg	35%	42%
EPTB	4%	2%
Retreatment	2%	3%

Treatment outcomes (new smear positive PTB)

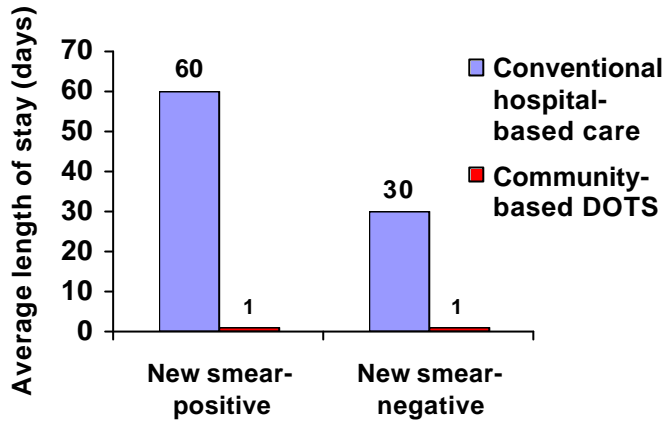
	Intervention group (n=740)	Control group (n=600)
Cure	78%	70%
Treatment completion	9%	15%
Failure	1%	4%
Died	5%	6%
Default	5%	2%
Transfer	3%	3%

Treatment outcomes (new smear negative PTB and EPTB)

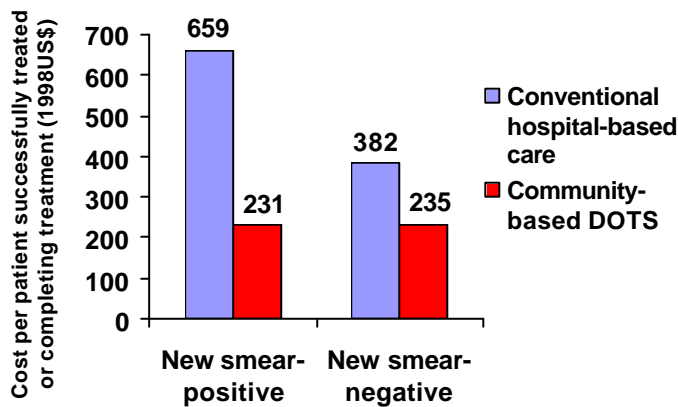
	Intervention group (n=500)	Control group (n=499)
Treatment completion	73%	48%
Died	8%	10%
Default	8%	37%
Transfer	11%	4%

The new intervention was acceptable to patients because it no longer required needle injections, nutrition was better at home than in hospital, and home is more comfortable than hospital.

Length of stay in hospital



Cost-effectiveness



Improvement in cost-effectiveness = 65% for new smear-positive patients, 38% for new smear-negative patients

Conclusions

Compared with hospital care, the new strategy was highly cost-effective, resulting in a 65% and 48% reduction in cost per successfully treated case of smear-positive and smear-negative TB, respectively. However, only 17% of patients chose a community health worker for DOT supervision. TB hospital wards have since been closed and the new intervention involving ambulatory options (clinics or community volunteer) for DOT is being extended to 2 additional districts in the Eastern Province of Kenya.

Lilongwe, Malawi

Background

The severe HIV epidemic in Malawi has contributed to a tripling of TB cases during the 1990s, with consequent congestion of TB wards. Lilongwe District, with an urban population of approximately 1.3 million, was selected as a pilot project for the decentralization of TB care. There was a change from in-patient care (for the initial phase of treatment) in 4 hospitals to the introduction of ambulatory care, with treatment supervision available at 21 health facilities. With decentralisation, DOT options for smear-negative PTB and EPTB patients included guardians (family members) or community volunteers or health facility supervision; the only DOT option for smear-positive PTB patients was health facility supervision.

Aim

To compare treatment outcomes, cost, and cost-effectiveness of the decentralized strategy versus routine hospitalization in the first 2 months.

Methods

All patients registered during 1998 were treated under the new strategy which included ambulatory DOT supervision at health facilities (hospitals or health centers) for all new TB cases and the additional option of guardian or community volunteer supervision for TB patients with smear-negative or EPTB. Patients treated during 1997 under routine hospitalization during the first 2 months formed the control group. The treatment regimens were also changed during the course of the study as follows:

	1997 (control group)	1998 (new strategy)
Smear pos PTB	2SRHZ/6HE	2R ₃ H ₃ Z ₃ E ₃ /6HE
Smear neg PTB	2R ₃ H ₃ Z ₃ /2HE/4H	2R ₃ H ₃ Z ₃ /6HE

An economic evaluation was undertaken to compare the affordability and cost-effectiveness of an approach to TB care which includes the option of community supervision of DOT with an approach relying only on health facility DOT. The impact of the community approach on average length of stay in hospital was also assessed.

Results

Table 1 shows treatment outcomes for new sputum smear-positive PTB patients registered in 1997 with those registered in 1998 (following decentralisation). Table 2 shows treatment outcomes for new sputum smear-negative PTB patients registered in the first 6 months of 1997 and 1998, under centralised and decentralised care respectively.

In 1998, community DOT supervision was the option chosen by 2.5% of new smear positive PTB patients, 54% of new smear negative PTB patients, and 48% of new EPTB patients.

Table 1. Comparison of treatment outcomes of patients with new smear positive PTB registered in 1997 with those registered in 1998 in Lilongwe district.

	<i>Jan – Sept 1997^a</i> (2SRHZ/6HE)	<i>Jan – Dec 1998</i> (2R₃H₃Z₃E₃/6HE)	<i>P – values</i>
Registered Patients	653	1492	
Number (%):-			
Cured	368 (56%)	958 (64%)	0.001
Completed treatment	12 (2%)	55 (4%)	0.024
Died	113 (17%)	302 (20%)	0.113
Defaulted	121 (19%)	69 (5%)	<0.05 ^c
Transferred out	37 (6%)	84 (6%)	0.973
Failed	2	6	0.737
Outcome unknown ^b	-	18 (1%)	

^a patients registered in fourth quarter are excluded because new (study) treatment regimens were used for most of this period

^b unknown outcome because treatment cards lost and no records in register

^c Exact p value is not given because it approximates zero at three significant figures

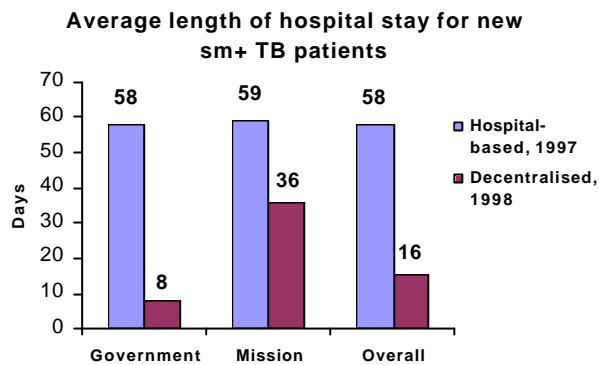
Table 2. Comparison of treatment outcome of new smear negative PTB patients registered in the first 6 months of 1997 and 1998, under centralised and decentralised care respectively

	1997 (2R₃H₃Z₃/2HE/4H)	1998 (2R₃H₃Z₃/6HE)	P – values
Registered Patients	554	581	
Number (%):-			
Completed treatment	185 (33%)	293 (50%)	<0.05 ^b
Died	23 (4%)	97 (17%)	<0.05 ^b
Defaulted (includes no information)	305 (55%)	136 (23%)	<0.05 ^b
Transferred out	41(8%)	54 (10%)	0.25
Stopped treatment ^a	0	1	-

^a treatment stopped because diagnosis of TB considered incorrect

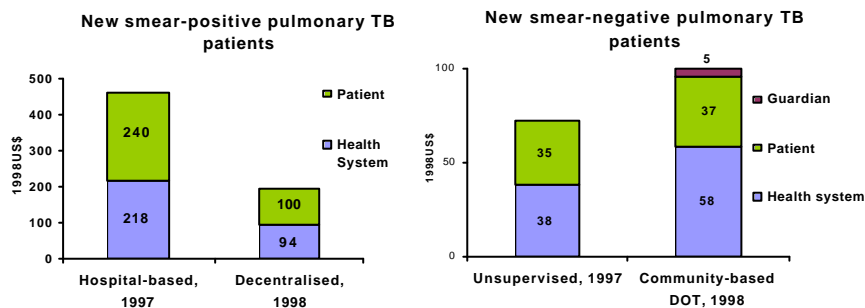
^b Exact p value is not given because it approximates zero at three significant figures

Hospital capacity to cope with rising caseloads



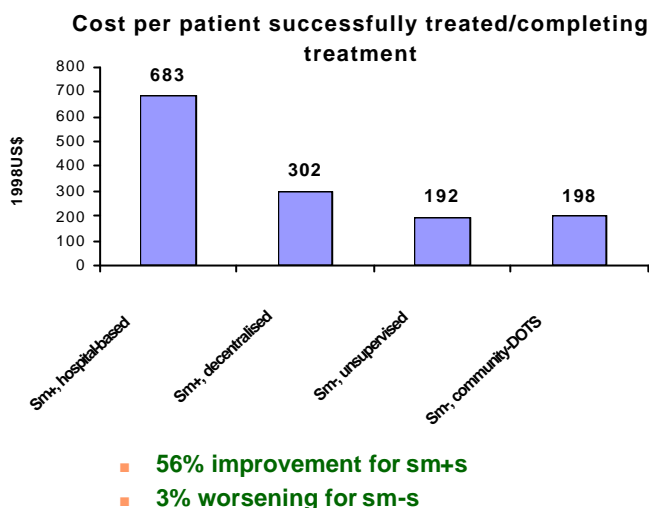
- Large reductions in average length of stay - increased capacity to cope with rising number of patients

Average cost from diagnosis to treatment completion



- Decrease in cost for sm+ PTB (57% for h. system, 58% for patients)
 - mainly reflects reduced length of hospital stay
- Increase in cost for sm- PTB (53% for h. system, 6% for patients)
 - reflects intro. of DOT visits and more expensive drug regimen
- Overall, 34% fall in h. system costs, 47% fall in patient costs

Cost-effectiveness



Conclusion

Before 1997 smear negative PTB patients were not routinely followed up and record keeping was poor. This largely explains the higher death rate among sputum smear- negative PTB patients in 1998 than in 1997, as many of the deaths in the earlier year may have been masked by the high "default" rate. Taking into account the high TB case fatality rate in this high HIV prevalence population, the district TB programme maintained adequate performance following decentralisation of TB care. Decentralization of TB care from hospital to include ambulatory DOT in peripheral units was highly cost-effective, resulting in a 56% decrease in cost per sputum smear positive PTB patient treated successfully. Most of the savings was attributed to reduced length of hospital stay. The same intervention was slightly less cost-effective for smear negative PTB cases, due to increased costs of supervising DOT and a more expensive treatment regimen, even though treatment outcomes improved.

Hlabisa, South Africa

Background

Hlabisa district in northern KwaZulu/Natal has a population of approximately 200,000 and is predominantly rural. HIV prevalence among pregnant women as of 1999 was 32% and TB notifications have increased from 312 in 1991 to 1904 in 1999. There is one hospital and 14 clinics in the district as well as 290 traditional healers registered with one of the 15 healer's associations in the area. In 1991 the district changed from 6 months totally inpatient treatment to predominantly outpatient treatment by lay supervisors, community health workers, and clinics. In spite of these changes to decentralization and community TB care, the system continues to be stretched by the growing TB disease burden. The purpose of this study was to assess the feasibility of adding traditional healers as an option for DOT supervision.

Aim

To assess the acceptability and effectiveness of traditional healers as supervisors of TB treatment.

Methods

Following initial hospitalization in Hlabisa hospital, residents of Mfekayi sub-district were offered supervision by one of 25 volunteer traditional healers in addition to the routine options of a clinic, community health worker, shopkeeper, or other lay people. This was the intervention group and outcomes following DOT supervision by traditional healers were not analyzed separately. The control population consisted of the whole of Hlabisa district excluding Mfekayi which did not have traditional healers as an option for community TB care and DOT. Acceptability was assessed through qualitative interviews with patients supervised by a traditional healer and the traditional healers themselves. An economic analysis of community TB care had previously been done in the district.

Economic analysis

A detailed economic analysis of the Hlabisa District TB control programme included a costing of the existing community involvement.¹⁴ This showed that the approach which included community contribution to TB care was very much more cost-effective than the previous approach relying on hospitalization in the initial phase of treatment. The involvement of traditional healers represents the addition of another treatment supervision option among existing community treatment options. The additional health service costs are likely to be small, incurred as the TB field workers monitor the traditional healers in addition to the other treatment supervisors. A fresh economic analysis was therefore not conducted.

Results

Between May 1999 and July 2000, a total of 132 patients were enrolled in the intervention group and 2279 patients in the control population. Of the 73 patients in the intervention group for whom outcome data is available, a total of 21 patients chose a traditional healer as their DOT supervisor. The 73 patients comprise 66 new patients (35 smear positive and 31 smear negative and extrapulmonary) and 7 retreatment sputum smear-positive patients.

	Preliminary treatment outcomes (new smear pos TB)	
	Intervention group (n=35)	Control group (n=638)
Cured		
Completed	32 (91%)	437 (68%)
Died	2 (6%)	59 (9%)
Defaulted	1 (3%)	34 (5%)
Transferred	0 (0%)	108 (17%)
Failure	not determined	not determined

Treatment outcomes (new smear neg TB and extrapulmonary)

	Intervention group (n= 31)	Control group (n= 592)
Completed	21 (68%)	389 (66%)
Died	9 (29%)	79 (13%)
Defaulted	0 (0%)	36 (6%)
Transferred	1 (3%)	88 (15%)
Failure	not determined	not determined

Supervision by a traditional healer was highly acceptable among all 18 patients interviewed. Favourable features of DOT by a traditional healer included proximity and short waiting times compared to the clinics. No evidence was found that traditional healers took advantage of their position to sell extra services or traditional medicines. The traditional healers themselves are quite satisfied with their role as DOT providers and are keen to increase their interaction with the health services.

Conclusion

Preliminary results suggest that patients chose a traditional healer more often than other potential DOT supervisors in the community. The acceptability of DOT from a traditional healer was high among both the patients and the traditional healers. Treatment outcomes in the intervention group are comparable to the control population. If the final project results confirm the effectiveness and acceptability of the contribution of traditional healers in Mfekayi sub-district, the district health authorities plan to extend this approach to other sub-districts in Hlabisa.

Guguletu, South Africa

Background

Guguletu is a township near Cape Town with a population of approximately 130,000. TB patients are offered the option of receiving DOT in the community through a TB treatment supporter, workplace, or clinic. TB treatment supporters come from the community and are provided with a cash incentive per patient treated each month. Prior research on high default rates identified poverty and substance abuse as important obstacles to treatment success.

Aim

To evaluate and compare programme performance in Guguletu for each treatment supervision option, i.e., clinic, community, and other supervision options.

Methods

Data for all pulmonary TB cases registered from July 1997 through December 1998 were analyzed. Those patients whose treatment was supervised in the community were identified through review of records at TB Care (the NGO responsible for managing the community worker aspect of the programme).

An economic evaluation was undertaken to compare the affordability and cost-effectiveness of an approach to TB care which includes the option of community supervision of DOT with an approach relying only on health facility DOT.

Results

A total of 1327 pulmonary TB patients were evaluated, including 1124 (85%) with smear-positive and 183 (14%) with smear-negative disease. Overall, 65% were male and the median age was 34 years. Sites of TB supervision included the health center (52%), community (39%), hospital inpatient (3%), and other (6%).

	Treatment outcomes (new smear pos TB)		
	Clinic DOT (n=338)	Community (n=331)	Other (n=54)
Cured	49%	70%	
Completed	9%	11%	68%
Died	2%	1%	9%
Defaulted	23%	14%	5%
Transferred	17%	5%	17%
Failure	0	< 1%	

Note: Other = workplace, home/self, school, hospital

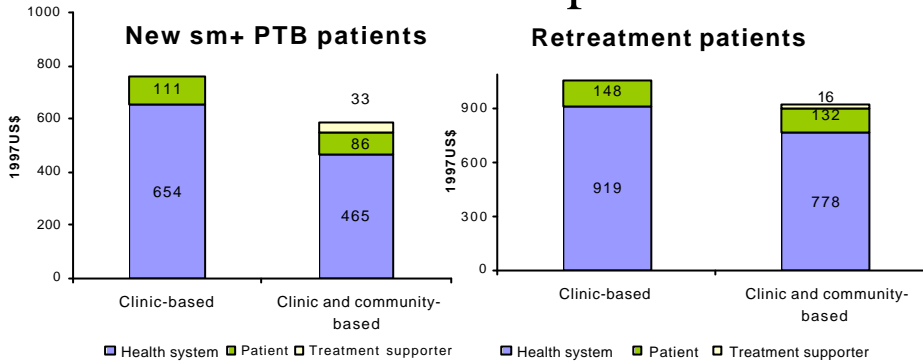
Patients treated under community DOT were significantly more likely to have treatment success than patients treated in the clinic (RR 1.4, 95% CI 1.2-1.5, P<0.001)

	Treatment outcomes (retreatment smear pos TB)		
	Clinic DOT (n=215)	Community (n=29)	Other (n=8)
Cured	41%	63%	33%
Completed	12%	10%	15%
Died	8%	3%	19%
Defaulted	29%	19%	22%
Transferred	9%	3%	11%
Failure	0	< 1%	0

Note: Other = workplace, home/self, school, hospital

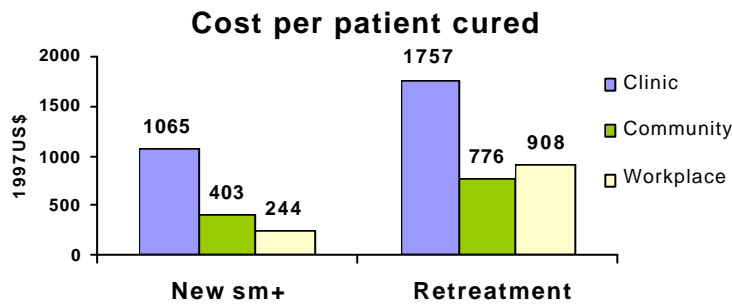
Patients treated under community DOT were significantly more likely to have treatment success than patients treated in the clinic (RR 1.4, 95% CI 1.2-1.6, P<0.001)

Average cost from diagnosis to treatment completion



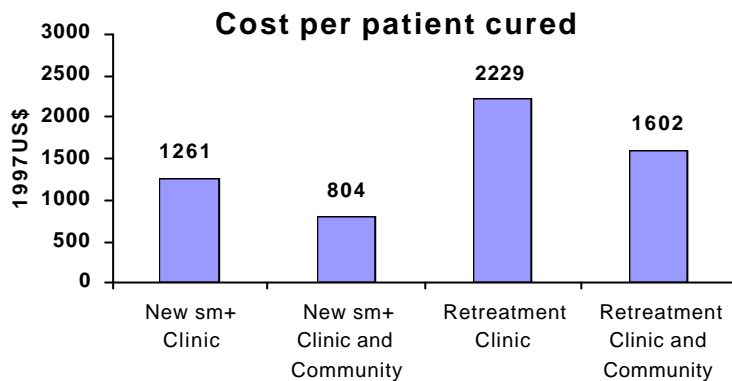
- Decrease in cost for new sm+ PTB (24% for h.system, 70% for patients)
- Decrease in cost for retreatment (14% for h.system, 11% for patients)
- Overall, 21% fall in h.system cost, 51% fall in patient cost
- Mainly reflects community DOT visit lower cost than clinic DOT visit

Cost-effectiveness: clinic, community, workplace



- For new sm+ patients, community-based care is 55% more cost-effective than clinic-based care
- For retreatment patients, community-based care is 43% more cost-effective than clinic-based care

Cost-effectiveness



- **36% improvement for new sm+ patients**
- **28% improvement for retreatment patients**
- **Overall, 33% improvement**
- **reflects both lower costs and higher effectiveness**

Conclusion

TB treatment outcomes were better for patients supervised by a community TB treatment supporter than for patients supervised in health facilities. However, because of other confounding variables associated with patient choice of treatment supervision option, it is not possible to conclude that treatment supervision by a community health worker was superior to treatment supervision by health facility staff. Project investigators will present in the paper for submission for publication in a peer-reviewed journal the results of a comparison of TB programme performance in Guguletu and in Nyanga, respectively areas with and without the option of TB treatment supervision by community health workers.

The cost-effectiveness analysis has compared the cost per patient cured in Guguletu (offering clinic and community options for treatment supervision) and in Nyanga (offering only the clinic option for treatment supervision). An approach offering clinic and community options is 36% more cost-effective for new smear-positive cases, and 28% more cost-effective for retreatment cases, than an approach offering only the clinic option. This approach provides a model for adoption elsewhere, suitable adapted to local settings, in the province and nationally.

Kampala, Uganda

Background

This project was undertaken in the Kawempe division of Kampala. This is an administrative region of Kampala City Council with a population of 150,000, served by the Kawempe Health Unit. The population density is high and the socioeconomic status of the population is poor.

Aim

The aim of the study was to evaluate the NGO contribution (The AIDS Support Organisation) to decentralised TB care in an urban setting.

Methods

The DOTS strategy was implemented in 1997 with the TB register kept at the Kawempe Health Unit. The AIDS Support Organization (TASO) started activities in Kawempe in 1998, aimed at mobilising community volunteers (CVs) to contribute to TB control activities, through the process of Participatory Rural Appraisal.

In line with NTP policy, all new sputum smear positive patients received treatment with 2HREZ/6EH. In the traditional hospital-based treatment, all patients were admitted for 2 months initial phase (IP) followed by monthly reporting to health units to collect drugs during the continuation phase (CP). With the introduction of the option of community-based treatment in 1998, patients could have DOT throughout treatment at Kawempe Health Unit or start at the Health Unit while identifying a CV and then continue with supervision by the CV.

The intention was to regard patients registered in the same area in 1997 as the historical control group for comparison of case finding and treatment outcomes with the intervention group (patients registered from 1998 onwards, following the introduction of the option of community DOT supervision).

Results

Case finding and treatment outcomes

There were 269 TB patients in 1997 (historical controls) before the introduction in 1998 of the intervention compared with 352 patients in 1998 and 381 in 1999. Case finding was similar in the intervention and control groups with approximately 50% of total patients being new smear-positive PTB. Unfortunately, the TB recording and reporting system was not working well in Kawempe, and consequently outcome results were not known for the vast majority of patients registered at Kawempe Health Unit during the course of the study.

Choice of DOT supervision options

Following the introduction of the option of community DOT in 1998, among patients in Kawempe about 8% chose supervision by a CV, 15% chose supervision at a health unit, and the remainder chose supervision in hospital.

Acceptability

There were problems with CVs, most importantly poor motivation and fear of catching TB. TB patients complained about the stigma associated with TB/HIV and with care provided through an organisation visibly identified with HIV/AIDS, long distances to the health unit and poor education about

DOT. TB patients said they had more confidence in doctors than in CVs and received poor information from CVs about DOT. Health care workers complained about being understaffed, the risks that their work posed for acquiring TB, and they mentioned that CVs should be paid in order for DOT to succeed.

Conclusions

The National TB programme has faced specific challenges in implementing effective TB control in Kampala, on account of the greater complexity of health service provision, and less cohesive nature of urban communities, in comparison with rural areas. Considerable improvements are necessary in the process of decentralising the provision of TB care to the urban health centres. Acceptance of community options for DOT supervision was lower than expected. The main reasons included: unwillingness of TB patients to accept DOT from CVs; inadequate process of selection of CVs; lack of confidence in adequate provision of care from the Health Unit. Further exploration of the reasons for lack of acceptance of community DOT supervision would be useful: on the supply side, the health service delivery reasons for difficulty in decentralising care; on the demand side, the reasons why patients didn't take up community options.

Kiboga, Uganda

Background

Kiboga district is rural with a population of 167,000. The NTP was experiencing many difficulties because of poor accessibility of TB services, high treatment interruption and poor community involvement.

Aim

The aim of the study was to evaluate in Kiboga District the effectiveness of the introduction of the option of community DOT supervision.

Methods

The study compared case-finding and treatment outcomes in an historical cohort registered in 1997 before the introduction of the option of community DOT supervision and in the intervention cohorts in 1998 and 1999 following the introduction of the option of community DOT supervision.

In line with NTP policy, all new sputum smear positive patients received treatment with 2HREZ/6EH. The option of community-based DOT (CBDOT) involved 2 weeks hospitalisation in the initial phase (IP) with early referral home and treatment to be continued for 8 months under daily supervision by a community volunteer (CV). Traditionally, hospital-based DOT involved 2 months hospitalisation in the IP followed by the 6 months continuation phase (CP) at home.

CBDOT involved the existing public health staff, namely the subcounty health workers (SCHWs), establishing contact with communities at parish level, asking the communities to identify a CV and then training and supervising this CV. In their community meetings at parish level, the SCHWs presented the key principles of TB control and discussed with the community members how to adapt them, taking into

consideration the local health facilities and community structures. This dialogue led to the establishment of a referral system between health center-SCHW-community-volunteer.

An economic evaluation was undertaken to compare the affordability and cost-effectiveness of an approach to TB care which includes the option of community supervision of DOT with an approach relying only on health facility DOT. The impact of the community approach on average length of stay in hospital was also assessed.

Results

Case Finding

	Before option of CBDOT (1997)	After option of CBDOT (1998-9*)
Total TB Cases	269	388
New sm pos	161 (59.9%)	262 (67.5%)

* 1998 and Q1-Q3 1999

Treatment outcome

	Before CBDOT option (%)	After CBDOT option (%)
Treatment outcomes	1997	1998-9*
Cured	76 (47.2)	166 (63.4)
Completed treatment	19 (11.8)	28 (10.7)
Failure	1 (0.6)	0
Died	25 (15.5)	37 (14.1)
Interrupted treatment	31 (19.3)	4 (1.5)
Transferred	9 (5.6)	27 (10.3)
Total	161	262
Treatment success	95 (59)	194 (74)

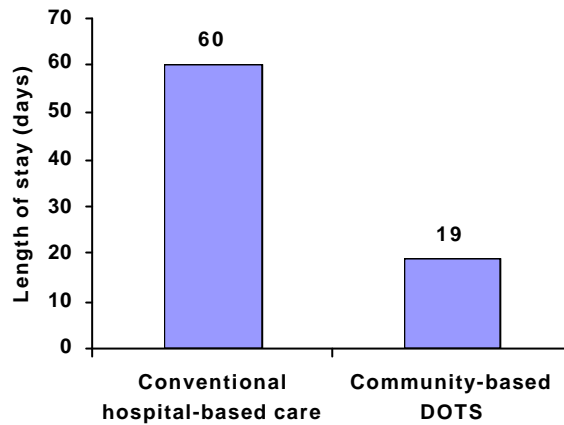
* 1998 and Q1-Q3 1999

Among new smear-positive PTB cases, there was a considerably better treatment outcome in the intervention cohorts (1998 and Q1-Q3 1999) after the introduction of the option of CBDOT than before (1997). The improvement was largely through success in dramatically improving patient adherence to treatment, with the treatment interruption (default) rate improving from 19.3% to 1.5%.

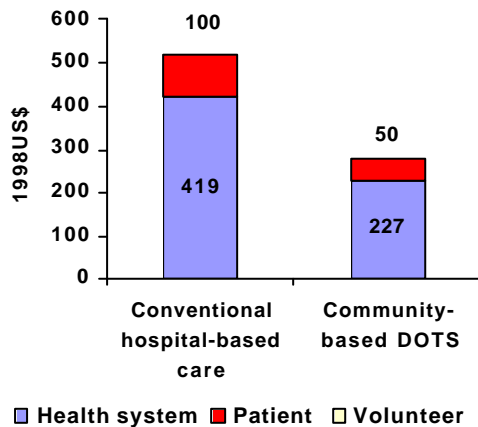
Among smear negative and EPTB patients in Kiboga, over 50% of patients on CBDOT completed treatment compared with 39% in historical. In both groups death rates were between 30 – 35% (similar to those reported from other high HIV prevalence countries).

CBDOT was associated with less costs per patient treated, better cost-effectiveness, shorter length of hospital stay, and good acceptability from patients especially as patients could stay with their families, continue to work and spend less money on care.

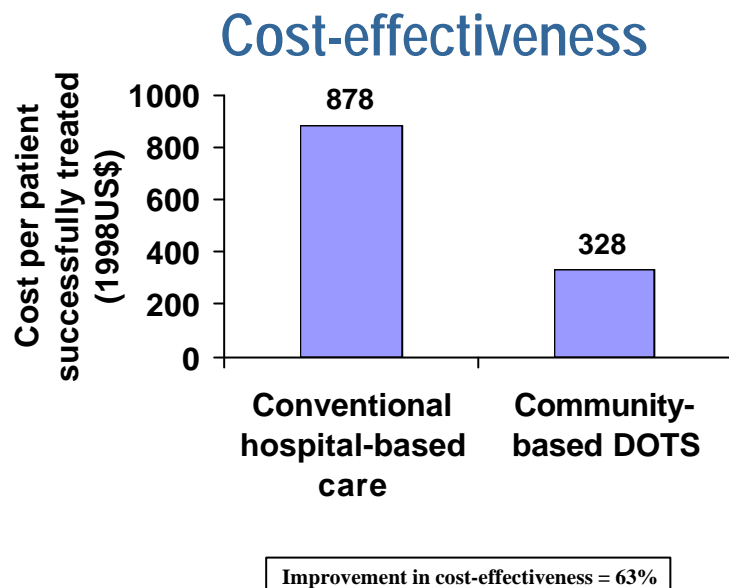
Length of stay in hospital



Cost per patient treated



- Substantial reduction in cost (46% for health system, 50% for patient)
- Main reason for reduction = reduced length of stay in hospital
- Major new costs = central level supervision, training for CB-DOTS implementation (US\$17.7 per patient each), SCHWs supervision (US\$9.3)
- Volunteer costs negligible (<US\$1 per patient)



Conclusion

Making available the additional option of CBDOT was very successful in this rural district. There was good dialogue between communities and local leaders and full integration within the district health services at the service delivery point. Health sector reform has recognised the success of this and has left untouched the NTP staffing structure.

Ndola, Zambia

Background

Ndola district has a population of approximately 1 million. The city of Ndola is divided into 42 townships with several shanty compounds. In 1995, TB control programme performance was poor, with a very low cure rate (15 – 20%), a high default rate in the initial phase (25%) and 75% of smear-positive cases having no follow up sputum smears at 2 months. There are several community-based home care programmes for chronically ill patients with AIDS. The Catholic Diocese provides assistance to these home care programmes in the form of technical assistance, drugs, transport and food while the community provide medical and nursing care, VCT testing. In one compound, Nkwazi, the home care programme had incorporated TB care into community-based care with treatment completion rates greater than 80%. This provided the rationale for expanding and testing the option of community-based DOT in the community-based HIV/AIDS home care programme in another compound.

Aim

The aim was to compare the results of making available the option of community DOT in Chipulukusu HIV/AIDS home care programme with results of providing DOT in Twapia compound where ambulatory TB treatment was provided by health centre staff.

Methods

Adults aged 15 years and above with new sputum smear-positive PTB were included. TB treatment was given according to standard guidelines.

Results

Case Finding

During the study period (1998 and Q1&2 1999), there were 60 new sputum smear-positive PTB patients registered in Chipulukusu and 74 new sputum smear-positive PTB patients registered in Twapia.

Treatment outcomes

The table shows treatment outcomes for smear positive patients (1998 and Q1&2 1999) in Chipulukusu and Twapia compounds.

	Cured (%)	Treatment completed (%)	Failure (%)	Died (%)	Treatment interrupted (%)	Transfer (%)	Total
Chipulukusu (intervention compound)	47 (78.3)	0	1 (1.6)	9 (15)	2 (3.3)	1 (1.6)	60 (100)
Twapia (control compound)	36 (48.6)	1 (1.3)	0	19 (25.6)	11 (15)	7 (9.4)	74 (100)

Among smear positive PTB cases, the cure rate was 78% in Chipulukusu compared with 49% in Twapia. Death rates and default rates were also lower in Chipulukusu (death rates = 15% versus 26%, and default rates = 3% versus 13%).

Acceptability

There has been a gradual acceptance of CVs in providing DOT, so that now they are consulted on cough and other illnesses. Refresher courses on TB, including DOT, help maintain CVs' motivation. Former TB patients have formed health education committees which give talks on TB and thus reduce stigma attached to TB. There is less congestion in the hospital.

Discussion

Integration of TB care into home based programme has generally worked well on the small scale of the population of a compound. However, there have been some problems. Patients move without informing staff and provide wrong addresses so that tracing defaulters is difficult. It has been difficult to identify sufficient numbers of CVs for the large numbers of patients. Because of problems with the National TB Programme, there was an erratic supply of drugs. Now that two out of the townships/shanty

compounds have successfully integrated TB care with home-based HIV/AIDS care, it is now necessary to develop a plan for scaling up the approach to cover the whole of Ndola district.

Kilombero, Tanzania

Background

Kilombero has a population of 250,000. There are 32 health units of which 18 provide TB treatment. TB control programme performance has deteriorated in the last few years with a decrease in case notifications, a decrease in cure rates and an increase in default rates. Involvement of the community may have the potential to contribute to TB control programme performance as part of overall strengthening of TB programme activities.

Aim

The aim of the study was to compare the results of the introduction of the option of community-based DOT (CBDOT) with the results of the previous system without the community option, i.e. institution-based DOT (IBDOT).

Methods

The TB treatment regimens are consistent with WHO recommendations: 2RHZE/6HE for smear-positive cases, 2RHZ/6HE for smear negative cases and 2SHRZE/1HRZE/5HRE for retreatment cases. The 18 health units, which provide TB treatment, were arranged in pairs, and each of these pairs was randomly selected to offer the option of CBDOT or to continue IBDOT. All seriously ill patients were admitted for the intensive phase of two months irrespective of residence in CBDOT or IBDOT areas.

In units which provided TB patients with the option of CBDOT, focus group discussions were held in villages and Community Volunteers (CVs) were selected. CVs had to be able to read and write and resident in the same place as the patient. After diagnosis, TB patients returned home for CBDOT supervised by a CV.

In units which continued the previous system of IBDOT, TB patients received treatment under direct observation from their nearest health institution.

Preliminary Results

Case Finding.

From January 1999 to June 2000, 617 patients were recruited in CBDOT areas (of whom 297 (48%) had smear-positive PTB) and 1062 patients were recruited in IBDOT areas (of whom 568 (50%) had smear-positive PTB). Out of 297 patients with smear positive PTB, in CBDOT areas, 49 were relapse patients, whereas out of 568 patients with smear positive PTB in IBDOT areas, 71 were relapse patients.

Treatment outcome

The table summarises preliminary treatment outcome results for smear positive PTB patients registered in 1999 and Q1&2 2000.

Table: preliminary treatment outcome results for smear positive PTB patients registered in 1999 and Q1&2 2000.

Treatment Outcome	Treatment options					
	IBDOT (135)		CBDOT (113)		Total (248)	
	N	%	N	%	n	%
Cured	43	31.9%	53	46.9%	96	38.7%
Completed treatment	7	5.2%	18	15.9%	25	10.1%
Died	21	15.6%	8	7.1%	29	11.7%
Out of control	14	10.4%	9	8.0%	23	9.3%
Transferred	50	37.0%	25	22.1%	75	30.2%

Treatment success rate (cure + treatment completion) was higher in the health facilities offering TB patients the choice of community TB treatment supervision than in those which offer TB treatment supervision only in the health facilities (62.8% vs 37.1%).

The table below shows the results of statistical analysis in comparing treatment outcome results (unadjusted for age group and sex) for IBDOT and CBDOT.

Treatment outcome		OR	95% CI	p-value
Cure	IBDOT	1		0.212
	CBDOT	1.89	(0.70; 5.13)	
Completed treatment	IBDOT	1		0.080

	CBDOT	3.46	(0.86; 13.93)	
Died	IBDOT	1		0.056
	CBDOT	0.41	(0.17; 1.02)	
Out of control	IBDOT	1		0.371
	CBDOT	0.75	(0.40; 1.41)	
Transfer out	IBDOT	1		0.177
	CBDOT	0.48	(0.17; 1.39)	

Preliminary conclusions

Since, these results are preliminary and do not yet take into consideration some missing data, they should be interpreted with caution. In the unadjusted analysis, the patients in CBDOT areas had a lower risk of death [OR 0.41, 95% CI 0.17-1.02, $p=0.056$] and a higher probability of completing the treatment [OR 3.46, 95% CI 0.86-13.93, $p=0.08$). There was no difference in the probability of cure, being out of control (default) or transferred.

The provisional interim conclusion is that health facilities offering TB patients the choice of community TB treatment supervision achieve a higher treatment success rate than those health facilities which offer TB treatment supervision only in the health facilities. The project is exploring ways of ensuring sustainability of CV contribution to TB care. On conclusion of the project, and confirmation of the effectiveness of CBDOT, the intention is to scale up CBDOT throughout the district. This will pose the management challenge to the district TB programme of ensuring supervision of the health facilities and of a district-wide network of CVs.

Estie, Ethiopia

Background

Ethiopia has a large population of 63 million with a NTP since 1960. There is a case incidence of 117/100,00 per year and national geographic coverage with the DOTS strategy is 65%. Estie district is rural in the North Western part of the country, with a population of 300,000 and with one health centre and 10 health stations. Recognition of the problems in the TB control of the district led to revitalisation of district tuberculosis control activities, including the formation of “TB clubs” (small support groups of tuberculosis patients based on where they live). The organisation of patients into the “TB clubs” led to

patients maintaining friendly ties among themselves and continuing “TB club” activities even when they had finished their treatment. From this has developed TB mahibers (local *anti*-TB associations).

Aim

To describe how these clubs and mahibers are constituted and how this has contributed to case finding and treatment outcome.

Methods

Each TB clubs elects a leader who is literate. Club members, usually numbering 3 – 10 patients, meet at least once a week and support each other to encourage adherence to treatment. TB clubs also refer TB suspects to clinics for investigation and link with other members of the community for help and support. On completion of treatment, patients are encouraged to join the TB mahibers for voluntary participation in tuberculosis control activities. The TB mahibers maintain close contact with the TB Clubs. Posters, pamphlets and booklets on tuberculosis produced by the ministry of health and regional health bureau were distributed and public reading was encouraged on social venues.

Results

The number of TB clubs has increased from 52 in 1997 to 65 in 1999. The 1999 TB club membership stands at 411. The number of TB mahibers has increased from 2 in 1998 to 5 in 1999. The number of TB suspects referred has increased from 181 in 1997 to 218 in 1999. Between 58 – 65% of all suspects are diagnosed with TB. In Estie District the activities of the “TB clubs and mahibers” have contributed to improve the treatment success rate (cure plus treatment completion) for smear-positive PTB from less than 40% in 1996 to 80% in 1999. Likewise, the defaulter rate was reduced from 31.8% in 1996 to 1.6% in 1999. The treatment completion rate for smear-negatives and for EPTBs was 75% in 1999. In the district the treatment given was the long course regimen.

Discussion

TB clubs and TB mahibers have contributed to improved NTP performance with no extra cost to the health services. There is a continued increase in the number of clubs and mahibers.

4. Expansion of community TB care

The experience gained in pilot projects has in some of the participating countries led quite quickly to plans for scaling up of the approach.

Botswana

The Botswana government has allocated a substantial amount of money to implement a national programme of home based care (HBC) primarily for patients with advanced AIDS. Funding includes

support for transport, supportive HBC nurses to train carers and visit households, drugs, gloves, and other supplies and materials. The pilot project in Francistown demonstrated that a trained family carer can deliver DOT as effectively as the health care system. Peripheral clinics, which are highly accessible, will continue to play the primary role for delivery of DOT. The Francistown data and experience will be further disseminated to the National AIDS Control Programme, National AIDS Coordinating Agency, and the Ministry of Local Government to advocate DOT at home by a carer for TB patients with advanced AIDS.

Through the National Homebased Care Programme, HBC nurses and Family Welfare Educators (FWEs) would be trained to: incorporate HBC of TB patients into the routine recording and reporting system; to integrate home DOT into comprehensive TB/HIV care of HBC patients; to educate carers of TB patients on DOT and record-keeping; to provide carers with the booklet, “Homebased Care of TB Patients in Botswana”.

South Africa (Cape Town)

Results of the successful Guguletu project have been disseminated both locally and internationally at scientific conferences. Within the Cape Town metropolitan area itself there are now an estimated 370 TB treatment supporters for 1669 TB patients, which is well below the maximum coverage of 10 patients per treatment supporter. The treatment supporters are provided with a cash incentive based on the number of patients being supported per month. Because of high unemployment rates, monetary incentives have been the most appropriate though other incentives may apply in different settings.

For TB community care to be successfully disseminated nationwide, The National Department of Health Health Department will need to assume responsibility for recognizing this strategy as part of national TB control policy, to develop criteria for when community TB care should be implemented in S Africa, commit resources to support community TB care, and decentralize planning and decision-making regarding community TB care to the health districts. At the district level, all stakeholders must be involved in planning, district TB data should be analyzed to detect performance problems, goals and targets must be set, and agreements/contracts must be developed with NGO care providers to ensure accountability to the community and health services.

The model developed and tested in Guguletu, Cape Town utilizing TB care supporters is already being disseminated nationwide through a government contract to TADSO, a TB NGO. TADSO, which originally was involved in the training aspect of the Guguletu project, has worked with at least 1 district in 8 of the 9 provinces to adapt the model to local circumstances. Adaptation of the model in this manner while retaining the essential elements of TB care is crucial. Implementation guidelines have been developed to help retain basic principles. Key elements for successful implementation include the use of standardized training tools and ongoing monitoring and evaluation of service provision by TB treatment supporters. Ongoing training and support to health staff, DOT coordinators, and TB treatment supporters provides encouragement and increases motivation.

South Africa (Hlabisa)

A community-based DOT program is already established throughout Hlabisa to which the option of using a traditional healer for treatment supervision is being added. A high percentage of patients first

consult a traditional healer for care so their involvement in TB care could significantly enhance case finding and successful treatment outcomes. At present, shopkeeper or clinic-based DOT are the two main options. The traditional healers are organized into an association which facilitates communication and planning for rollout once the pilot study is completed. The traditional healers are enthusiastic about playing a greater role in health care provision in the area and being further integrated into health service delivery in the community.

The existing monitoring and evaluation system for community-based DOT through shopkeepers will be used during the rollout to traditional healers. Traditional healers will be visited on a monthly basis by a field worker to review the treatment cared held by the traditional healer and the patient's drug supply. The current practice is for the field worker to deliver the 6-month supply to the DOT supervisor, ie, shopkeeper of traditional healer. No large financial commitment will be required for the rollout of the program since an existing community TB care structure exists and the main thrust of the project is to add an additional option for DOT supervision, traditional healers.

Machakos, Kenya

Community TB care will be expanded beyond Machakos to other primarily rural districts in Kenya based on the following criteria: limited accessibility to TB health services in the community; high TB case load and HIV prevalence; community health structures in place; poor TB performance indicators.

The sites proposed for immediate expansion are Kitui District and Makueni District, but it is planned to have expanded to at least one district in each of the 12 provinces by March, 2001. The National TB Programme is committed to the rollout, and decision-makers in national government and local community leaders in the planned areas have been sensitized.

To further strengthen decentralization of TB care, the Ministry of Health has replaced streptomycin with ethambutol nationwide (since May 2000), IEC materials have been developed, AFB microscopy centers have been expanded and improved (5 new microscopes/district have been provided and a microscope rehab unit has been opened), and the central referral laboratory is being upgraded to improve drug susceptibility testing. The district TB coordinator will increase supervisory visits to DOT providers from once every three months to monthly. Districts are already equipped with paid field health educators who are the coordinators and supervisors of community health workers who will provide DOT in addition to other services and care.

Uganda

Uganda has already embarked on expansion. There are a number of steps involved:

1. Advocacy

The advocacy strategy has involved i) 6-monthly reviews at zonal level, ii) sharing of results with stakeholders, iii) briefing of the Minister of Health, iv) briefing of senior members of Ministry of Health, v) ensuring that Community care was a theme at World TB Day, and vi) the production of a document on CB-DOT.

2. *Scaling-Up*

This is on-going and part of the Health Sector Reform (HSR) Programme. The success of the Kiboga project in harnessing the community contribution to TB care played a part in positioning the NTP as a pathfinder for the HSR themes of decentralisation and community participation. District Hospital Plans have been produced, and districts chosen on the basis of NTP-DOTS coverage, TB case notification rates and district TB control performance. NTP activities (which include making available the option of community DOT supervision) are part of the Ministry of Health Sector Strategic Plan for 2001-2005.

3. *Resources*

There are two aspects:

- a) Resources for activities which involves the Government as the major source of support and the district through local government which is helped by district services conditional grants. The NTP also receives assistance for this from the Poverty Alleviation Fund.
- b) Human resources

4. *Quality Assurance*

Standardised procedures have been adopted for CB-TB care. An action plan is part of this involving at each district – a review of TB control activities, discussions with the District Hospital Committee, training of Health care workers at the Health Unit, visits to each diagnostic centre and training of community health workers. It takes on average about 3 months to prepare a district for CB care. There is a system in place to engage DTOs who are already implementing CBDOT to be facilitators in other districts.

5. *Economic Analyses*

Detailed economic analyses are needed to generate per capita figures which can be used for advocacy purposes.

Malawi

TB care in Malawi has been decentralised to 5 districts in the country. The first district was Ntcheu, chosen because of its good TB performance and because of close access to the central unit in Lilongwe. The next was Lilongwe, the urban district in Malawi with the capital city. Then came Salima, Machinga and Zomba, chosen on geographical grounds and also because of reasonable access from the central unit.

The established system of TB control in Malawi has already been described. The decentralised system uses an oral directly observed intermittent regimen for the Initial Phase followed by a daily unsupervised regimen for the Continuation Phase. Patients can choose either hospital-based treatment, health centre based or guardian-based. Follow-up is on all TB patients.

There are some variations in practice from district to district. Lilongwe offers community based options from day 1, while the other districts hospitalise patients for the first 2 weeks followed by community-based options. In Ntcheu, guardian based treatment is offered to all TB patients while in the other districts it is only offered to patients with smear-ve PTB and EPTB.

N. B.

Ntcheu reports on cases notified between July 1997 and December 1998; Lilongwe reports on cases notified between January to December 1998; the other 3 districts report on cases notified between July – December 1998. Results are reported for all districts combined, except where otherwise indicated. Altogether 6633 cases were notified, which includes 6334 cases with new TB (42% smear+ve PTB, 35% smear-ve PTB and 23% EPTB).

A number of questions were asked in order to inform decisions about country-wide expansion.

Question: Is Guardian based treatment a satisfactory strategy?

1753 (28%) of all patients opted for GB. Treatment outcomes were similar to those observed using health centre and hospital OPD, except there was a higher proportion using GB with an unknown outcome (14%). This reflected the fact that many smear-ve patients opted for GB where treatment cards were often lost. In Ntcheu, 131 (30%) of 428 new smear-positive PTB patients choose GB – treatment completion was 74% similar to what was observed in Health centre based supervision. It was concluded that GB treatment was satisfactory for smear-positive cases while for all types of TB there was a high proportion of DF and unknown.

Question: Is oral intermittent treatment associated with satisfactory outcomes?

8-month outcomes were reasonable with treatment completion rates of 67% IN 2668 Smear-positive PTB, 48% in 2212 smear-negative PTB and 54% in 1454 EPTB. However there was a concern about high death rates which were 23% in smear-positive PTB. There was also concern about missing data on smear-ve PTB (21%) and EPTB (14%). It was concluded that treatment outcome in smear-positive PTB was good apart from a high death rate (see below), and there was missing information on smear-ve PTB and EPTB.

Question: Are smear conversion rates satisfactory at 2 months?

Of 2320 smear +ve PTB patients alive at 2 months, 83% were smear-ve, 6% were smear+ve and 11% did not have smears examined. The conclusion was that smear conversion rates are good, although a proportion of patients do not have smears examined.

Question: Is the oral intermittent treatment regimen associated with a higher death rate compared with the established regimen (2SRHZ/6HE)?

Three pieces of evidence were produced to suggest a higher death rate.

- i) Historical control study in Lilongwe showing 14% death rate using established regimen compared with 21% using oral intermittent regimen.
- ii) Historical study in Salima, Machinga and Zomba showing 17% death rate using established regimen compared with 24% using oral intermittent regimen.
- iii) 4-district concurrent comparison study showing 23% death rate using established regimen compared with 25% using oral intermittent regimen.

It was concluded that there may be excess deaths using the oral intermittent regimen, and a pragmatic change was made to the treatment regimen to give RHZE daily for 2 weeks, R3H3Z3E3 for 6 weeks and HE for 6 months.

From research to policy and practice

Malawi has decided to go for country wide expansion using the new regimen described above, offering guardian-based treatment to all patients. It is a phased approach with half the country implementing this year and the rest following by middle of 2001. There needs to be careful monitoring and there is an appreciation that there are “risks”.

5. Training

Training of different categories of health workers at the various levels of the health system as well as training of community members as TB treatment supporters has been an important component in each of the pilot projects. During the meeting the discussions focused on the:

- definition of the tasks/role of the community TB treatment supporters;
- identification of relevant groups/ categories to perform the identified tasks.
- steps to be taken in training management

The tasks of the community TB treatment supporter varied in the different projects, but included the following main tasks:

- a) support the TB patient to ensure adherence to treatment (including DOT)
- b) promote IEC about TB
- c) refer TB suspects for sputum examination
- d) refer TB patients on treatment for sputum checks
- e) record necessary information in DOT cards
- f) refer patients who have adverse drug reactions
- g) feed back information about treatment outcomes to the TB team
- h) be involved in the planning early on about community contribution to TB care

Small booklets to support the community TB treatment supporter have been developed as well as more comprehensive training material. WHO will review and combine this material in producing a generic booklet to guide community contribution to TB care.

In order to ensure that the community TB treatment supporter and other health workers involved in the community TB care activities are capable of performing their roles the training programmes should be carefully planned and managed. Participants identified the following steps to be taken in the introduction of community contribution to TB care:

- Conduct a situation analysis in the setting for community contribution to TB care;
- Identify all relevant players in enabling community contribution to TB care;
- Specify the roles and functions of each player;

- Establish the relationship between the players and functions in the context of the existing health delivery system;
- Develop a training plan to cater for all the relevant players and functions;
- Design and produce training tools (technical and operational manuals/guidelines, training manuals tailored to the roles and tasks of the players)
- Prepare for training (identify funds, identify relevant facilitators, conduct TOT, schedule training)
- Conduct the training
- Monitor and evaluate to identify new needs for training and retraining.

6. Main recommendations

1) When TB care should be extended to the community.

NTPs should extend TB care to the community where health services are providing the basic elements of the internationally recommended TB control strategy, but scope remains to improve access to services of acceptable quality, e.g. the services may be costly or TB wards may be congested. Access to the TB services may be difficult because the community is poor or because there are long distances to health facilities.

2) Pre-requisites for harnessing community contribution to TB care.

The community and the government should identify TB as a priority public health problem and agree to take shared responsibility. The NTP should be strong, with all the necessary components in place, particularly an effective recording and reporting system.

3) How to ensure that community members are effective TB treatment supporters:

a) identification of suitable community TB treatment supporters requires consultation with the community, consideration of the benefits for sustainability of using a well-established community group, ensuring volunteers practice good hygiene, maintain confidentiality and fit into the relevant team structure specific to the local situation.

b) training of community TB treatment supporters requires clear definition of roles and core tasks to ensure an effective working relationship with health workers;

c) health service support to community TB treatment supporters, including supervision, requires a system of regular contact between the community TB treatment supporters and general health service and NTP staff, which may involve regular review meetings and a link person between the peripheral health unit and the community TB treatment supporters to help foster effective communication;

d) preventing “drop-out” community TB treatment supporters requires ensuring that they continue to receive whatever is the perceived benefit in a specific setting.

4) Recording and reporting system

NTPs should ensure an effective recording and reporting system extended into the community, with registers beyond the district in the peripheral health units (indicating the type of DOT for each TB patient), and the community TB treatment supporters responsible for the patient treatment card, and the TB patient keeping an identity card (with information including type of treatment, type of DOT supervision, sputum results).

5) Anti-TB drugs

NTPs should ensure an effective, secure and safe system of supply to TB patients and their treatment supporters of anti-TB drugs, provided and packaged in ways to promote adherence (e.g. fixed-dose combinations, calendar blister packs).

Drug stock-keeping. There should be an established system of recording drug stocks at all levels. When drugs are provided to health units or sub-health units the amounts received should be recorded by a designated person. Standardised forms may be needed for this purpose. Similarly DOT forms may be needed for community based workers to record drugs given to patients.

Drug regimens. The regimens used should be consistent with national guidelines. The regimens should be oral and preferably in fixed-dose combinations and provided in calendar blister packs. Whether the drugs are given daily or intermittently, and whether RH is used just in the initial phase or in the continuation phase as well depends on a) financial resources and b) ability to provide DOT for the full length of treatment.

Drug supplies. The central level should procure anti-TB drugs. Proper and secure storage needs to be assured for all anti-TB drugs. Security of drugs is an issue. All attempts must be made to ensure that drugs are not stolen from health units and do not appear in the “black market”. Periodic drug resistance surveillance will be important to monitor drug security procedures.

Drug distribution. There must be a regular drug supply. This should be quarterly from Central level and Region level to the districts. It should be monthly from districts to health units, and possibly two weekly from health units to community health workers. However, there needs to be flexibility in this approach, and the system adapted to the local situation. The important principle is that the patient has an uninterrupted supply of drugs and that drugs do not leak out of the system.

6) Monitoring and evaluation

NTPs should monitor community contribution to TB care using the standard NTP performance indicators (case finding and treatment outcomes), information on the numbers of patients choosing different DOT options, and, as they are developed, quality of care indicators.

7) Financing

Ministries of Health need to ensure adequate financing, on account of the new costs involved in harnessing community contribution to TB care, while recognising that this is a cost-effective approach.

The key financing issues:

- a) community contribution to TB care is associated with cost savings but also with new costs which require up front investment;
- b) community based care should not replace government commitment or funding – it should be regarded as complimentary and supplementary;
- c) budgets should not be cut because of perceived cost savings – there is a need to manage more patients and to finance new costs;
- d) there are urban and rural differences.

New costs for community contribution to TB care include:

- a) one-time start-up costs e.g. training, situational analysis, community mobilisation, supervision at central level;
- b) on-going recurrent costs per patient eg training, incentives, supervision and management at district, zonal and central level, community mobilisation.

Source of funds to cover new costs:

The options for funds are from the government, NGOs, and donors. Government has the primary responsibility for financing. It needs to identify the new costs, put them in a national budget and seek partners for help with financing. Patients should not be asked to fund their own care.

8) Sustainability

Obtaining the commitment of Ministries of Health, NTPs, donors and NGOs to ensure the sustainability of the community approach requires advocacy and policy development based on results.

9) Expansion

NTPs should develop costed plans for expansion of the community approach. NTPs should develop clear criteria for choosing the districts targeted for expansion (e.g. NTP performance, problems of access).

10) HIV/AIDS care organizations

Ministries of Health should consider opportunities for collaboration between NTPs and HIV/AIDS programmes, including community health worker provision of integrated HIV/AIDS and TB care (although caution is necessary to ensure that the stigma commonly attached to HIV/AIDS does not deter TB patients from obtaining care from HIV/AIDS groups). It is generally not sustainable to load community members with successive additional responsibilities.

7. Conclusion

These provisional results from district-based projects in different settings indicate that providing the option of community DOT can contribute to NTP activities in ways which are effective, cost-effective, affordable and acceptable, under the conditions set out in the above recommendations. In

settings achieving high rates of treatment success, it will be valuable to explore how community contribution to TB care can also extend beyond supporting TB patients and ensuring adherence to treatment to helping identify TB suspects in order to intensify case-finding.

Harnessing the contribution to TB care of HIV/AIDS groups as opposed to other community groups raises specific problems. These include the often small scale of their activities and the stigma commonly attached to HIV/AIDS (which may deter TB patients from obtaining care from HIV/AIDS groups). Further research is necessary to determine how to harness the contribution specifically of HIV/AIDS groups and how to overcome stigma. It has been suggested a long time ago that “the extension of treatment beyond hospital wards and clinics will also have the advantage of abolishing the mystery surrounding the disease in the eyes of those who are hesitating to seek advice, and therefore lead to their being more rapidly diagnosed... and cured”.¹⁵ It is crucial to explore whether the extension of treatment of the common HIV-related diseases (TB, pneumonia, diarrhoea) beyond hospital wards and clinics can also help to abolish the mystery surrounding HIV disease.

It is important to base policy recommendations on sound evidence. One way of ensuring that the evidence is sound is for PIs to submit their results for publication in peer-reviewed journals. PIs agreed to write up for each project a linked pair of papers, one on the general aspects of the project and a linked paper on the economic analysis. In addition to the papers from the individual projects, an overall paper would be useful synthesising the results and drawing the policy conclusions. Dissemination of the results of the TB community care project locally can contribute to national policy development and international dissemination can contribute to regional and global policy development.

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Annex 1 Meeting agenda

Wednesday, 27 September 2000

8.30 – 9.00	Registration	
9.00 – 9.10	Opening	WHO/AFRO
9.10 – 9.20	Welcome	Dr Eugene Nyarko
9.20 – 9.30	Introduction, objectives and expected outcomes	Dr Dermot Maher

Presentation of results by Principal Investigators (15 min presentation, 15 min discussion) on effectiveness, economic analysis, acceptability

9.30 – 10.00		Francistown, Botswana
10.00 – 10.30		Machakos, Kenya
10.30 – 10.45	<i>Break</i>	
10.45 – 11.15		Lilongwe, Malawi
11.15 – 11.45		Hlabisa, South Africa
11.45 – 12.15		Guguletu, South Africa
12.15 – 13.45	<i>Lunch</i>	
13.45 – 14.15		Kampala, Uganda
14.15 – 14.45		Kiboga, Uganda
14.45 – 15.15		Ndola, Zambia
15.15 – 15.30	<i>Break</i>	
15.30 – 16.00		Kilombero, Tanzania
16.00 – 16.30		Estie, Ethiopia
16.30 – 17.00	Discussion: main themes emerging	Dr Dermot Maher

Thursday, 28 September 2000

The Asian experience

9.00 – 9.30	(20 min presentation, 10 min discussion)	Dr B.V. Sharma
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Links between community approach to TB care and other diseases

9.30 – 9.15	Malaria community care in Tigray, Ethiopia	RBM
9.15 – 9.30	Provision of care for people with HIV related diseases	HSI
9.30 – 9.45	Discussion on links between malaria and HIV/AIDS community care with community TB care	

Main themes – lessons learned from “Community TB care in Africa” project

9.45 – 12.15 Working groups discuss main themes and come up with recommendations/ guidelines to address those themes

10.30 – 10.45 *Break*

Themes for working groups:

Group 1

- Recording and reporting systems in the community
- Distribution of anti-TB drugs

Group 2

- Addressing priority roles of community members

Training and supervising community members

Group 3

- Sustainability, motivating community members
- Financing

Group 4

- Identifying relevant community group
- HIV/AIDS community care organisations

Identifying and mobilising community members

Group 5

- Developing links between general health services, NTP and the community organisation, and establishing a referral scheme
- Extended NTP management responsibility

12.15 – 13.45 *Lunch*

13.45 – 15.00 Working Groups

15.00 – 15.15 *Break*

15.15 – 17.00 Plenary - presentation of recommendations and guidelines by rapporteurs of working groups (10 min presentation, 10 min discussion)

15.15 – 15.35 Group 1

15.35 – 15.55 Group 2

15.55 – 16.15 Group 3

16.15 – 16.35 Group 4

16.35 – 16.55 Group 5

16.55 – 17.30 Discussion

Friday, 29 September 2000

9.00 – 9.30 Dissemination of results and publication of papers

9.30 – 9.50 Implications for World Bank activities in sub-Saharan Africa World Bank Representative

Expansion of approach with adaptation to other settings

Quality control in expansion

Presentations by Principal Investigators (5 min presentation, 5 min discussion)

9.50 – 10.00 S. Africa

10.00 – 10.10 Kenya

10.10 – 10.20 Malawi

10.20 – 10.30 Uganda

10.30 – 10.45 Break

10.45 – 12.15 Plenary – finalising recommendations for policies and guidelines

12.15 – 13.45 Lunch

13.45 – 16.30 Development and use of education tools and training materials (writing committee to meet during this time)

15.30 – 15.45 Break

16.30 – 17.00 Next steps – wrap up Dr Dermot Maher



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